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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,486	12/19/2001	Benny W. Chow	130109.417	5218

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EXAMINER	
TRAN, HIEN THI	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 03/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/037,486	CHOW ET AL.	
	Examiner	Art Unit	
	Hien Tran	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 22 December 2003.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-74 is/are pending in the application.

4a) Of the above claim(s) 21-74 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) 1-74 are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: see attached PTO1449

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 5-6, 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Shioiri et al (5,026,536).

Shioiri et al discloses an apparatus comprising: a first bed having an inlet for receiving a hydrocarbon stream and comprising a metal oxide (col. 3, lines 51-60); a second bed downstream of the first bed (col. 3, lines 62-68); and a third bed comprising copper-zinc adsorbent and being located downstream of the first bed (col. 4, line 21). Shioiri et al further discloses provision of heating means for heating at least one of the fuel stream and the beds (col. 3, lines 32-35).

Instant claims 1-2, 5-6, 19-20 structurally read on the apparatus of Shioiri et al.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-6, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor, Jr. et al (5,882,614) in view of Shioiri et al (5,026,536).

With respect to claims 1-6, 19-20, Taylor, Jr. et al discloses an apparatus comprising: a first bed 46 having an inlet for receiving a hydrocarbon stream and comprising a metal oxide (zinc oxide); a second bed 52 downstream of the first bed 46; and a third bed 84 comprising zinc adsorbent and being located downstream of the first bed. Taylor, Jr. et al further discloses provision of heating means 42 for heating the fuel stream and inherently heating the beds.

The apparatus of Taylor, Jr. et al is substantially the same as that of the instant claim but is silent as to the specific type of the adsorbent in the third bed.

However, Shioiri et al discloses the conventional of providing adsorbents for adsorbing sulfur-containing compound including zinc oxide adsorbent, copper-zinc adsorbent, etc .

It would have been obvious to one having ordinary skill in the art to alternately select an appropriate adsorbent for the adsorbent bed of Taylor, Jr. et al for the known and expected result in obtaining the same result in the absence of unexpected results.

6. Claims 7-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor, Jr. et al (5,882,614) in view of Shioiri et al (5,026,536) as applied to claims 1-6 and 19-20 above and further in view of Voecks et al (5,057,473), Nieskens et al (4,673,557) and van der Wal et al (4,478,800).

The modified apparatus of Taylor, Jr. is substantially the same as that of the instant claims, but fails to disclose whether more than one bed may be provided for each first, second and third.

However, Voecks et al discloses that more than one adsorbent bed may be provided for further purifying the gas (col. 5, lines 31-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide more than one element as taught by Voecks et al in the modified apparatus of Taylor, Jr. et al, so as to completely remove all sulfur in the gas and since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Nieskens et al and van der Wal et al show the conventionality of providing adsorbent beds connected in parallel so as to disconnect one bed during operation while the other remains in service.

It would have been obvious to one having ordinary skill in the art to provide the second of each type of bed in parallel as taught by Nieskens et al and van der Wal et al in the modified apparatus of Taylor, Jr. et al so as to facilitate the regeneration of one bed while maintaining the other in service.

Response to Arguments

7. Applicant's arguments filed 12/22/03 have been fully considered but they are not persuasive.

Applicants argue that the second bed in Shioiri et al is a steam reformer and is not a part of the desulfurization unit. Such contention is not persuasive as the second bed of Shioiri et al

contains the same nickel as recited in the instant claim and therefore meet the second bed of the instant claim. Note that the instant claim does not recite any to distinguish the nickel bed of the instant invention from the nickel bed of Shioiri et al.

Applicants argue that in Taylor et al, only the bed 46 and 52 are parts of a desulfurization unit, and bed 84 is located downstream of the FBSG unit 60. Such contention is not persuasive as Taylor et al discloses that the gas is passed into a sulfur absorption zone 84 via line 82 (col. 6, lines 49-58) and therefore the bed 84 is also a part of the desulfurization unit. The fact that it is located downstream of the unit 60 is irrelevant since there is nothing recited in the instant claim to exclude such position.

Applicants argue that Shioiri et al does not teach that the catalyst could be moved upstream of the reformer. Such contention is not persuasive as Shioiri et al in this case is only relied upon for teaching the specific type of absorbent.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hien Tran

Hien Tran
Primary Examiner
Art Unit 1764

HT
March 12, 2004